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THE SCIENCE NEWS-LETTER

A Weekly Summary of Current Science

EDITED BY WATSON DAVIS

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Dr. Edwin E. Slosson
CHATS ON SCIENCE

THE NEW WORLD

The world we live in is a new world. Nobody ever lived in such a world before.

It is a bigger world because there are more people in it.

It is a smaller world because one can get around it quicker.

It is a more complex world because of the many new forces that have entered into it.

It is a simpler world to understand for it has been more thoroughly studied and classified.

It is for the first time a known world, at least a knowable world. Practically all parts of it have now been explored. Most parts of it have been accurately mapped. Since Amundsen has visited the south pole and Peary has visited the north pole no place on the globe's surface can be regarded as inaccessible.

We can now for the first time take stock of our resources and calculate our potentialities. We know just how much land we have at our disposal. We know that we will never have any more land. We know pretty well what this land will grow and what it will not grow. We know how much food and what kinds each individual needs. We can then figure out how many people the earth can support at any given standard of life.

We cannot see underground but from looking at the edges of the strata where it is tipped up and from boring into it a mile or more in various places we can tell about how much coal and oil, iron and copper, potash and phosphate we have to go on and we know that we can never get any more when this runs out.

In this new world of ours there is no more free land. The open range has gone forever. It is all staked out in private claims. Some flag floats over every bit of dry land. The last of the maverick territory, Spitsbergen, was caught and branded during the late war. This means that if any nation is to get more land it must get it from some other nation.

There are many more nations than there were in the nineteenth century. Some twenty or more infant independencies are struggling for existence. If we call the cradle roll of the new-born nationalities we find them scattered from the Balkans



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MEMORANDUM FOR THE DIRECTOR

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to the Baltic, from Ireland to Azerbaijan, from Palestine to Vladivostok; all new and untried factors in the world's affairs.

War is new. It is fought with weapons hitherto unknown.

Commerce is new. Strange commodities are carried by novel channels of trade.

Finance is new. The old standard is lost and no one knows which nations are bankrupt and which solvent.

Science is new. It is outgrowing its clothes, its old formulas and theories.

Consequently it is more difficult than ever to predict the future or to apply the lessons of the past.

The historian, Seeley, once remarked; "When I hear a man say 'History teaches us' I say to myself that man is going to tell a lie and he always does."

History cannot help us much because it is the history of another and very different world than ours. So many unknown quantities have been introduced into our present problem that it cannot be solved by the old rules.

READING REFERENCES- Bowman, Isaiah. The New World. A comprehensive account of the geography of the world as it is left after the war, by the president of the American Geographical Society. World Book Co. Outline of Science, New York, G. P. Putnam Sons, 1922.

GULF STREAM BLAMED FOR FREAKY WEATHER

Variations in the temperature of the Gulf Stream are advanced by Dr. C. F. Brooks, professor of meteorology at Clark University, as a probable cause of the extraordinary weather reported during the past six months from both sides of the Atlantic ocean. The subject first received attention from scientists at the meeting of the National Academy of Sciences in Washington last month where Dr. C. G. Abbot of the Smithsonian Institution announced a recent fall in the heat of the sun of some three or four per cent.

A summary of freaky weather conditions recounted by Dr. Brooks includes an extraordinary amount of ice in the western ^{North} Atlantic, a very early spring in northwestern Europe, an equally tardy one in eastern America, and unusually cold, rainy weather over northern Africa.

These conditions seem to have resulted, he says, from the presence of a large area of warm ocean water in the eastern Atlantic, causing expansion of the warm, moist air, southwest winds over western Europe, northwest winds over eastern America, and northeast winds over northern Africa, a combination which would result in conditions observed the past six months.

The more remote cause is probably variations in the temperature of the Gulf Stream, Dr. Brooks states:

The first thing I noticed when I stepped out of the car was the cool breeze against my face. It felt like a warm blanket after a long, hot day. I took a deep breath, inhaling the fresh air and the scent of blooming flowers. The sun was just setting, painting the sky in shades of orange and pink. I walked towards the park, my heart racing with excitement. The children's laughter and the rustling of leaves filled the air. I found a spot under a large, old tree and sat down, watching the world go by. The moon was just beginning to rise, casting a soft, silvery glow over the landscape. I felt a sense of peace and tranquility that I had never experienced before. The night was perfect, just what I needed. I stayed there for hours, lost in thought and the beauty of the night. The stars came out, twinkling in the dark sky. I felt like I was part of something special, something magical. The night was long, but it felt like it was just beginning. I was in the right place, at the right time. The night was perfect, just what I needed. I stayed there for hours, lost in thought and the beauty of the night. The stars came out, twinkling in the dark sky. I felt like I was part of something special, something magical. The night was long, but it felt like it was just beginning. I was in the right place, at the right time.

"Four to six months after a period of strong northeast trade winds in the eastern Atlantic a body of water warmer than normal is usually found passing through the Florida Straits and flowing northeastwards, while from the 8th to the 11th month cooler water follows. The warm water heats and supplies the air over it with an abundance of moisture, thereby expanding the air and favoring low pressure. This in turn not only makes muggy, showery weather when winds are on shore, but also tends to draw heavy air in unusual amounts out of the cold north and northeast, thereby creating storms. Later the cooler water makes the air less humid and favors quiet weather with general mild, southerly winds. It will be of exceptional interest to watch for such weather evidences of a warm Gulf Stream from May to July or August, followed by a cooler one from September or October through to February. Already, the heavy rainfall of northern and semi-arid northeastern Brazil in February, may have been a manifestation of an advancing area of unusually warm water in the equatorial current, which feeds the Gulf Stream."

Among the freaks of the weather listed by Dr. Hooks are the warm spring in England which caused the appearance of spring flowers there in February; heavy rains in the northern Sahara desert so that stream beds at Biskra which have been empty three years were reported full; and wide variations in the snowfall in the United States with heavy falls in May in many sections.

READING REFERENCES- Agassiz, Alexander. Gulf Stream. In Smithsonian Institution Annual Report for 1891. Washington. Smithsonian Institution.

"ABYSSINIAN SPINACH" GROWS SKYSCRAPING GREENS

Although the plant breeder's dream of a strawberry-milkweed hybrid is still far in the future of impossibilities, the Department of Agriculture has succeeded in successfully introducing to the United States an Abyssinian plant immigrant which gives a product nearly the equivalent of spinach and vinegar. It may be served without the "vinegar" if desired.

The plant is still known only by its botanical name "*Rumex Abyssinicus*" although such names as "Abyssinian spinach", or "Abyssinian rhubarb" have been proposed. The leaves may be eaten as spinach, the stalks as rhubarb.

It is a hot-weather plant requiring a long growing season to come to full development but it will grow at least as far north as the northern border of this country. When fully grown the plants are about seven or eight feet high, bearing large broad leaves. It may be planted outdoors but is better started indoors or under glass and set out about the time apple blossoms fall, as it is tender to frost.

The characteristic of the plant as a food is its sharp, yet pleasant acid flavor, resembling rhubarb. If the leaves are used, this quality may be eliminated to a great extent by pouring off the water in which the leaves are cooked and washing with fresh water. The leaves cook very tender, excelling spinach in this respect, and for those who like spinach with an acid flavor the African plant is most acceptable.



This Abyssinian immigrant was intended as a substitute for rhubarb in the south where that vegetable can not be grown successfully and where spinach also is a difficult crop in midsummer. Rhubarb will not flourish where the ground does not freeze for a fairly long period. The new vegetable has been distributed in all sections of the country and has become so popular that the supply of seeds at the Department of Agriculture has been exhausted.

READING REFERENCES- Bailey, E. H. S. and Bailey, Herbert S. Food Products from Afar; a popular account of fruits and other foodstuffs from foreign lands. New York, The Century Company, 1922.

SCIENTIST GETS THRILLS IN LAND OF BLUE TIGER

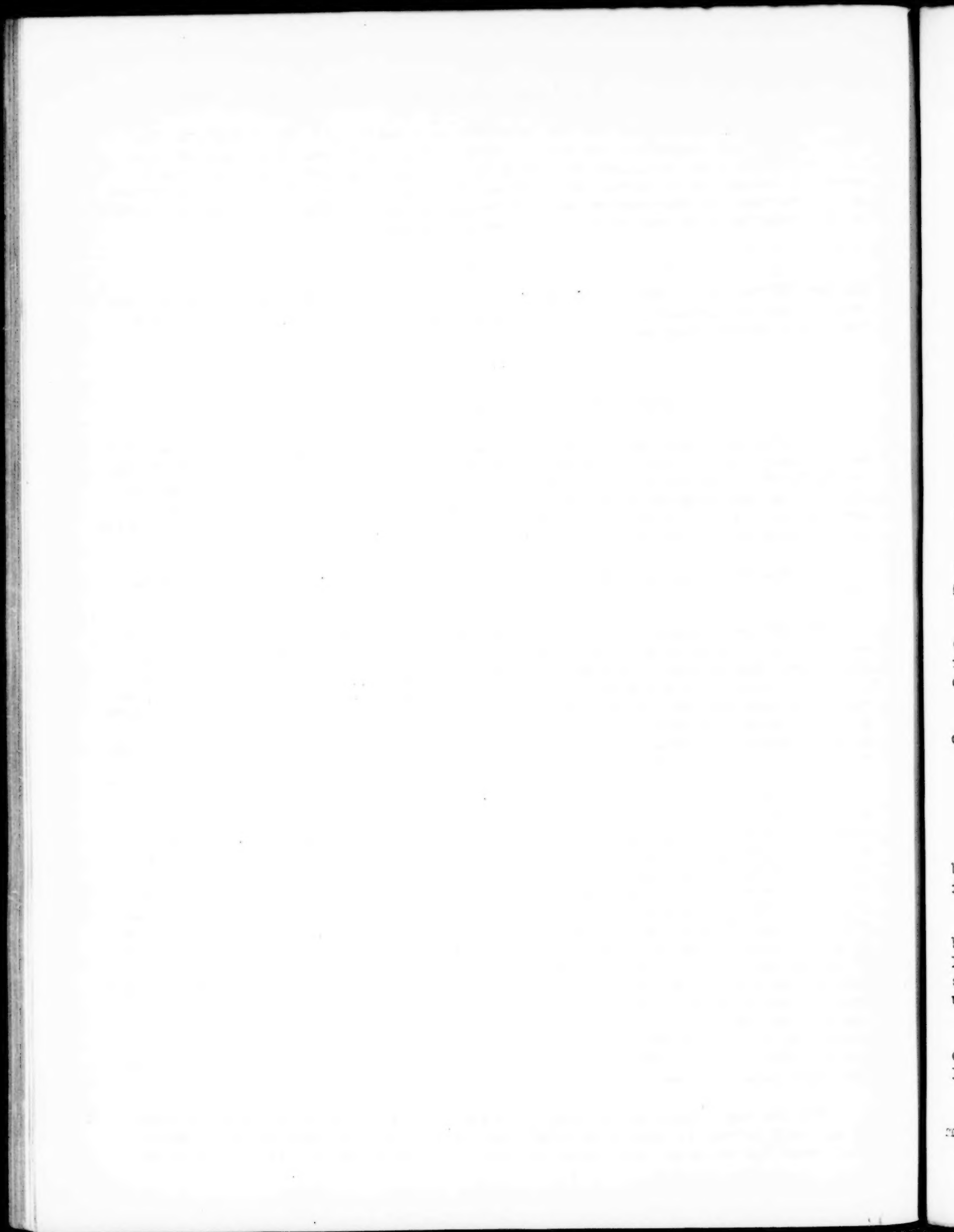
Bandits, hold-ups and kidnappings, recently reported from chaotic China, are not the only form of thrills furnished by that land of modern mystery. The Smithsonian Institution has just published a letter from A. de C. Sowerby, zoological explorer in the interior of Fukien Province in southeast China, which tells of strange blue tigers, primitive pre-Chinese dog-face men, and nights of terror while waiting attack from man-eating beasts.

Mr. Sowerby, who collected animal specimens for the U. S. National Museum wrote:

"I have met Caldwell, the man who saw the famous 'Blue tiger', and he tells me it was of such a color that he thought it was a chinaman in his blue coat in the brush. But he had a good enough view of the animal to be perfectly certain of what it was. And the only reason why he did not shoot it was that it was just above two boys who were working in a field, and had he shot it it must have fallen on top of them. Indeed, it was actually stalking them when he saw it. Yenping-fu is a wonderful animal centre. Caldwell got a tufted muntjac and a leopard just back of his compound, and wild cats, palm-civets and what not actually in it.

"This is very, very beautiful country. I have never seen anything quite like it. The whole country is hilly and mountainous, and covered with heavy underbrush, and woods of spruce, pine, and deciduous trees. The rivers and streams are clear as crystal, studded with rock, and exquisitely beautiful. The underbrush is a terror to get through by reason of its denseness and the sword-grass that occurs everywhere and cuts like a razor. I like the people, and find them very friendly. At this moment I am camped in the local temple of a small village, my things spread all over the place. I am the centre of interest for the whole countryside. People come and burn incense and chin chin joss, and then stop to look at me and have a good chin wag. It doesn't seem to worry them that I have dead rats on the altar. And the small boys bring me in rats, and mice, and shrews, and bats. Truly they are a most remarkable people. And there have been ever so many cases of murdered missionaries in the province in bygone days. I don't believe these people are pure Chinese. Some of them have most remarkably bushman-like faces. They say that there are real aborigines in the province, and the natives call them dog-faced men.

"By the way, there was a tiger reported here this afternoon! One man came in and said he saw it take a chicken. And there isn't any door to this temple. What would you do under the circumstances? All the tigers in this province are



man-eaters! I have made plans to try conclusions with this particular fellow tomorrow, but he may assume the offensive first. Don't think me an alarmist. I'm not. I'm merely telling you the cold truth about things. The other day when we were on our way up here we pulled up for the night beside a village. And all along the shore were the fresh tracks of two tigers. There was a lovely stretch of white sand, and it was bright moonlight, and so I kept the cabin window open and my rifle handy... and I'll swear I woke up every 20 minutes and had a look out of the window. Next day we hears that 15 people had been killed by tigers in the neighborhood during the past month or so."

SHARKS JOIN WAR ON DIABETES

Man-eating sharks will be used to save the lives of diabetic sufferers if experiments inaugurated by the U. S. Bureau of Fisheries and the U. S. Public Health Service Hygienic Laboratory here are successful.

A. A. Ellsworth of the Bureau of Fisheries staff is now collecting pancreas from the sharks caught at a shark fishery in Florida. About three dozen sharks are taken each day and their pancreas glands each weight about a half pound.

Insulin is obtained now from the pancreas of animals but the Toronto scientists who discovered this palliative for diabetes have found that the similar glands of fishes contain the valuable substance.

This is the first effort to produce high-priced biological products for medicinal purposes from the glands of fishes, it was learned at the Bureau of Fisheries. Usually the viscera of fish are wasted or used for producing fertilizer, oil, or other low-priced products.

The public health and fisheries experts are also considering the possibility of using glands from other fishes.

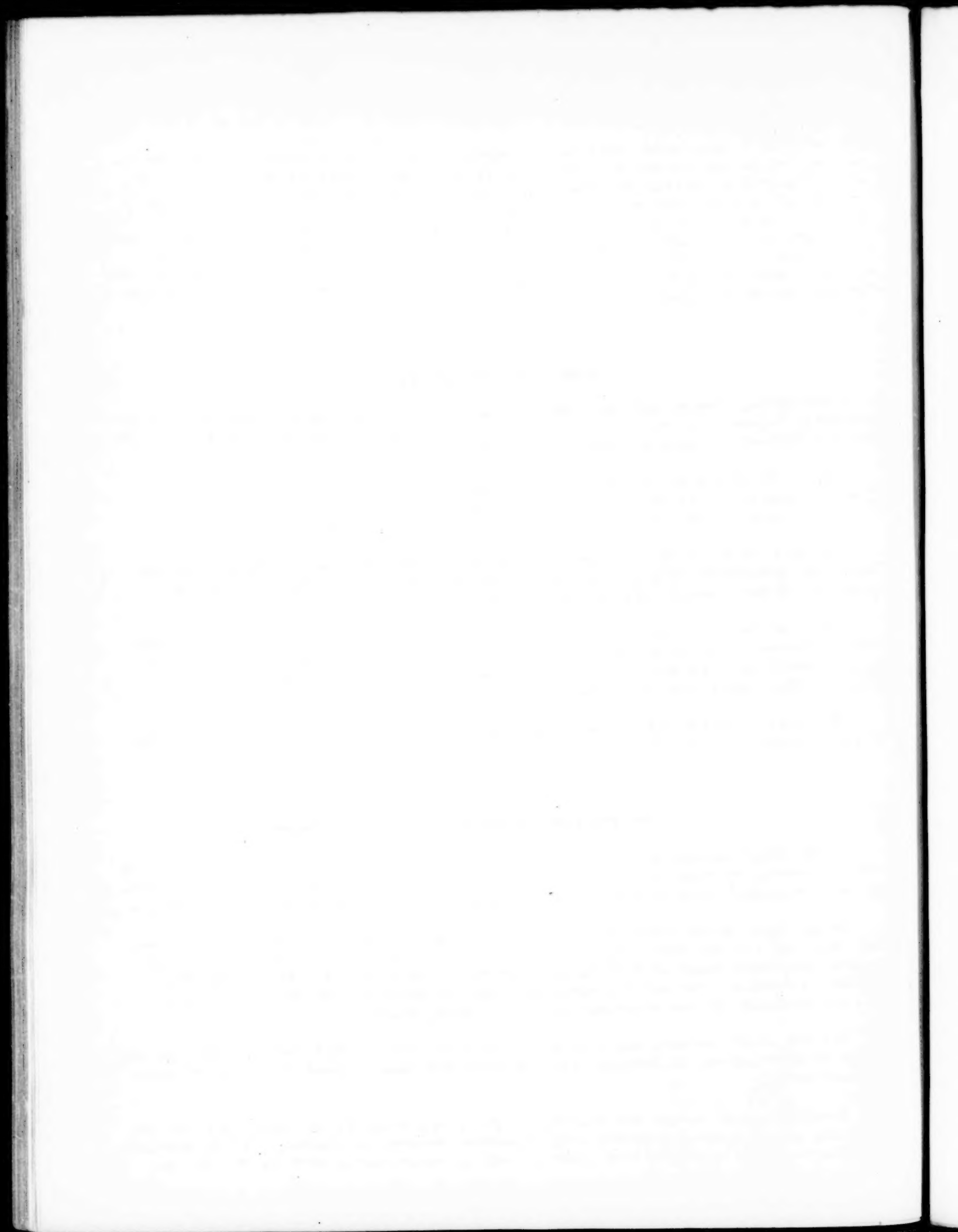
PLANTS YIELD EXTRACT FOR COMBATING DIABETES

A new plant extract that acts like insulin, the new specific for diabetes, has been discovered by Prof. J. B. Collip of the University of Alberta, Canada, according to a statement that he has cabled to Nature, the English scientific periodical.

Onion tops, onion roots, barley roots and sprouted grain, green wheat leaves, bean tops and lettuce were subjected to extraction and a substance obtained that lowered the blood sugar of rabbits into which it was injected. Its action was similar to insulin, the extract obtained from the pancreas, which is now being used successfully in the treatment of the disease, diabetes.

The new plant hormone has been named "Glucokin" by Prof. Collip, who was one of the original group at Toronto that isolated and demonstrated the value of insulin last year.

Insulin is now costly and scarce, as its preparation is difficult and the raw material, animal pancreas glands from slaughter houses, is limited. If an insulin substitute can be obtained from plants, such as experimented with by Dr. Collip,



the problem of production will probably be simplified and its use extended.

As reported by Science Service last December, Dr. Collip obtained insulin from clam tissue, and he later obtained an insulin-like substance from yeast. A Science Service dispatch in March told that two British biochemists, L. B. Winter and W. Smith of Cambridge, had independently isolated an anti-diabetic substance from yeast.

FLAT SCARCITY PRODUCED PREHISTORIC FARM MOVEMENT

Housing shortage among prehistoric cliffdwellers may have caused America's first "back-to-the-farm" movement. A report of explorations shortly to be published by the Smithsonian Institution declares that a study of pottery from ancient apartment houses built in the cliffs of Mesa Verde National Park, Colorado, compared with that from similar dwellings in the open country lends support to this theory.

The character of the pottery renders "it easy to accept the theory that the Mesa Verde caves became so crowded with buildings that their inhabitants were compelled to move out and, having constructed pueblos, to settle on the mesa tops near their farms."

The pueblo ceramics show evidence of changes in style, it is pointed out, and some of the pottery from the ruins recently excavated on the mesa is almost identical with that of the cliff houses. Other pieces are of a different type indicating that these open country villages were inhabited later than the houses built in the shelter of the hills.

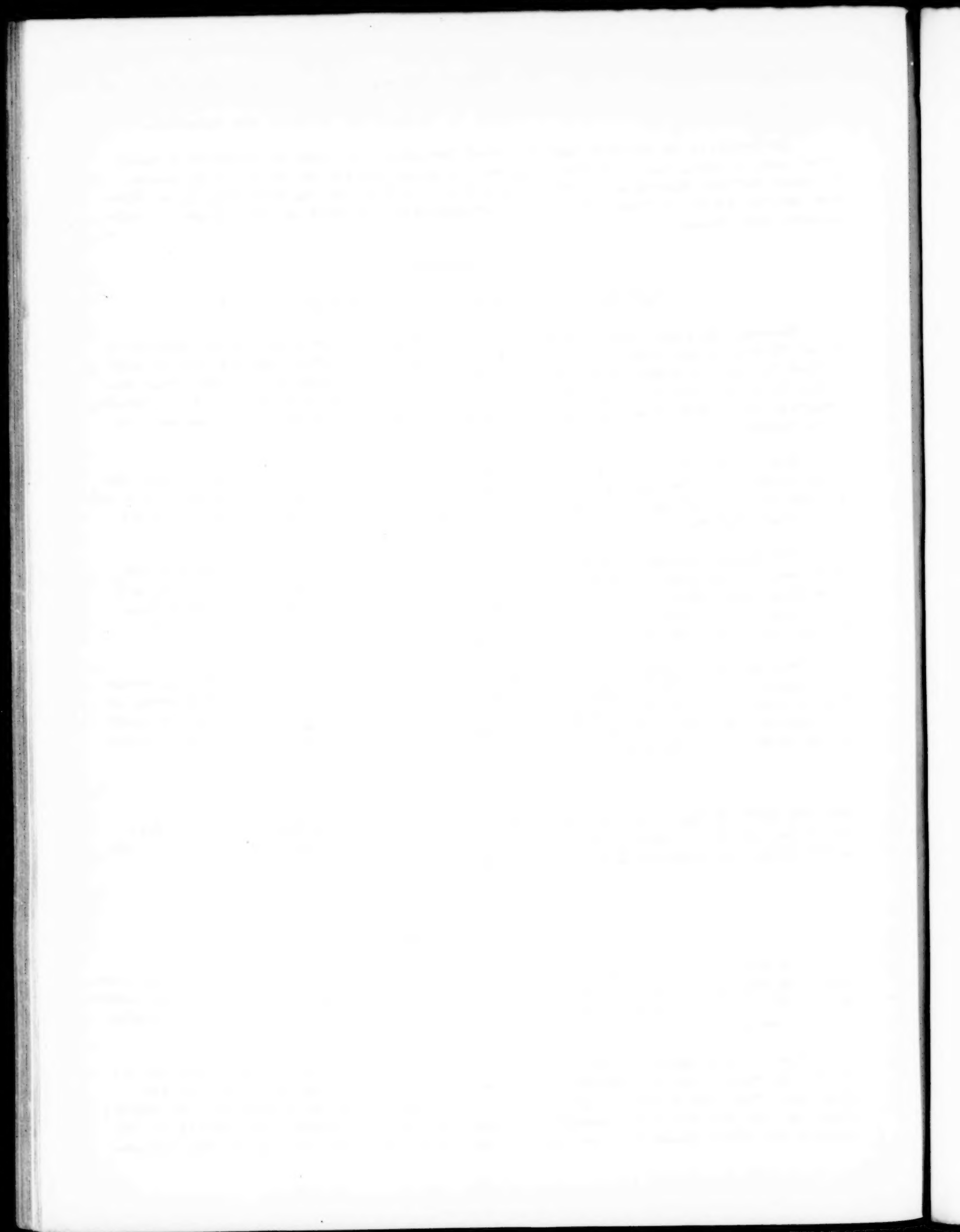
The report proposes that the country surrounding these ancient Indian towns be cleared of the sage-brush with which it is now largely covered and planted in Indian corn, the national food of the cliff-dwellers, so that the future student or tourist can behold a Mesa Verde village in approximately the same environment as in prehistoric times.

READING REFERENCES- Archeological Field Work on the Mesa Verde National Park, Colorado, in "Explorations and Field Work of the Smithsonian Institution in 1922. Washington, Smithsonian Institution, 1923.

OAT HULLS ARE DRY; YIELD SUGAR BUT NO ALCOHOL

Alcohol will not be a by-product of oatmeal, in spite of the hopes of an oatmeal company to combine the manufacture of two of the famous products of Scotland in one process. Oat hulls yield sugar, but it is not the sort from which alcohol may be made.

Such is the substance of a report made by the Forest Products Laboratory of the U. S. Department of Agriculture to which the oatmeal company referred the problem. When subjected to the chemical treatment known as hydrolysis the woody fibre of the oat hulls is changed to sugar, or more accurately to several of the substances which chemists class under that name. Alcohol is made by the ferment-



tation of sugar and so it was thought that the oat hulls might furnish a source of supply of that useful fluid.

But the chemists spoiled the dream. Sugars are present but they are pentoses, so called from having five atoms of carbon in each molecule instead of the six atoms possessed by the sugars which ferment to alcohol. Nature has made the oat hull irretrievably dry.

But there is a little consolation. The pentosans may be transformed into furfural on a commercial scale. This substance may be used in the fabrication of varnishes or resinous substances similar to bakelite, of which such things as billiard balls, buttons, pipe stems, phonograph records, and non-conducting substances for electrical equipment may be made. Before the war it cost \$30 a pound. It now sells for 25 cents and may be produced in large amounts at a lower figure. So the ^{oat} hull may be of use after all.

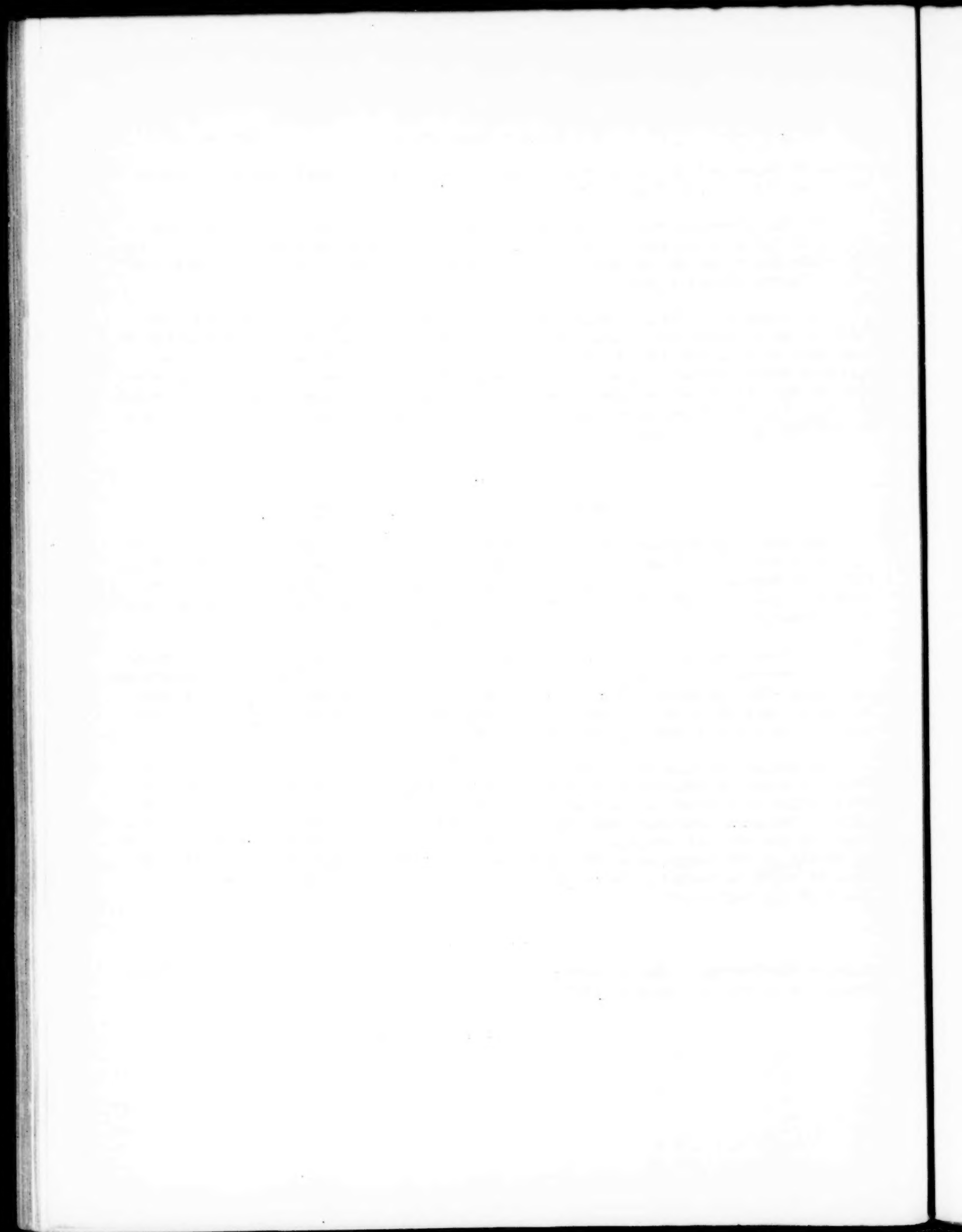
MANLESS PLANES NOW CONTROLLED FROM AIR

Manless airplanes have been "flown" by an operator not on the ground but in another plane. The flights have been made at the army flying fields at Mineola, N.Y., and Dayton, O., according to a recent announcement of Brig. Gen. William Mitchell, Assistant Chief of the Air Service of the army. Flocks of bombing planes so controlled are a probable feature of the next war.

Airplane control of other planes by radio is considered better than control from an operator on the ground, a system which has long been beyond the experimental stage, Gen. Mitchell said. It enables the man in control to see the planes and their work while at the same time keeping himself in a position of relative safety. This would mean a saving in personnel.

"Machines are easier to replace than men", Gen. Mitchell said. "It takes years to train an aviator so that he is of the highest value in combat service. This method of control of bombing planes from the air will save valuable men and will at the same time make bombing more accurately carried on. There need be no limit on the size of the planes controlled by radio; the controls are worked just as easily on the large as on the small ones and with a separate wave length for each it would be possible for a single aviator in a small plane to control a flock of big bombers."

READING REFERENCES- Smith, Lawrence Yard. The Romance of Aircraft. New York, Frederick A. Stokes Company, 1919.



VENTILATION LITTLE USE IN VERY HOT
HUMID AIR

Ventilation is of little use in reducing discomfort from high temperatures in humid air, after the temperature has risen to approximately that of the human body, according to a report of recent experiments made by the U. S. Bureau of Mines on the physiological effect of high temperatures with and without air movement. In temperatures up to 95 degrees the movement of the air caused much relief. At 100 degrees the symptoms were fully as severe with moving air as with still.

The experiments were carried out by Dr. R. R. Sayers, chief surgeon of the Bureau of Mines; and D. Harrington, supervising mining engineer. The subjects were experienced mine laborers. The work was carried on in deep and hot metal mines..

The principal effects of exposure to hot, humid, and stagnant air were a rise in the body temperature of two or three degrees, a fall in the blood pressure, perspiration so profuse that the subjects' shoes were partly filled with sweat, and sensations of giddiness and weakness. These symptoms were all very pronounced at 95 degrees, in stagnant air.

If the air were in moderate motion, little discomfort was felt.

This was not the case, however, at temperatures of 98 degrees and more. Symptoms in still air, which were more trying at the lower temperatures were not much relieved by a current of air, while at 100 degrees they were so unbearable that even when the air was moving the subjects were not able to stand a full hour's exposure to the conditions.

More recently a more thorough study of the effect of high temperature has been made possible through the use of a specially designed room where any desired conditions of temperature, humidity and air movement which are likely to be met may be maintained.

From this a system of "comfort lines" is being worked out, a graphical representation of the combinations of temperature and moisture at which equal comfort is experienced. It has been shown that while humidity has a marked influence the temperature taken by the ordinary dry-bulb thermometer is of great importance. The discomfort experienced is shown to be due more to the increase in the pulse rate than to any other cause.

GLANDS CAUSE PREMATURE AGE

Glands which cause premature age rather than prolonged youth have been used by Dr. W. M. Swingle of Yale University to turn tad-poles into frogs. This process, which in the case of the bullfrog Nature does not complete inside of a year, has been accomplished by Dr. Swingle, using the gland treatment, in about two weeks. The thyroid glands of adult frogs were grafted into bullfrog tadpoles to make them hustle into premature froghood.

Thyroid gland substance is known to have some mysterious effect upon development and when the gland is unnaturally small at birth, or its function is impaired, a child's physical and mental growth is so stunted that it becomes a deformed idiot.

In some cases reported by other investigators where bits of the thyroid gland were fed, the development was more rapid than the growth of the tadpole, so that frogs apparently adult but no bigger than flies were obtained.

Tadpoles deprived of their thyroid and pituitary glands ordinarily were found by Dr. Swingle not to transform into frogs; they remained tadpoles long after normal tadpoles had metamorphosed. However, if these tadpoles without their glands are fed on thyroid or substances containing much iodine they can be made to transform. Some food containing iodine is necessary if tadpoles complete their life cycle. Without iodine they remain in the infantile stage.

OFFER NEW SOLUTION FOR TIN CAN PROBLEM

Another method of using old tin cans is suggested to the American Electrochemical Society by metallurgists of the U. S. Bureau of Mines and the University of Washington. They propose making synthetic cast iron from the proverbial goat food.

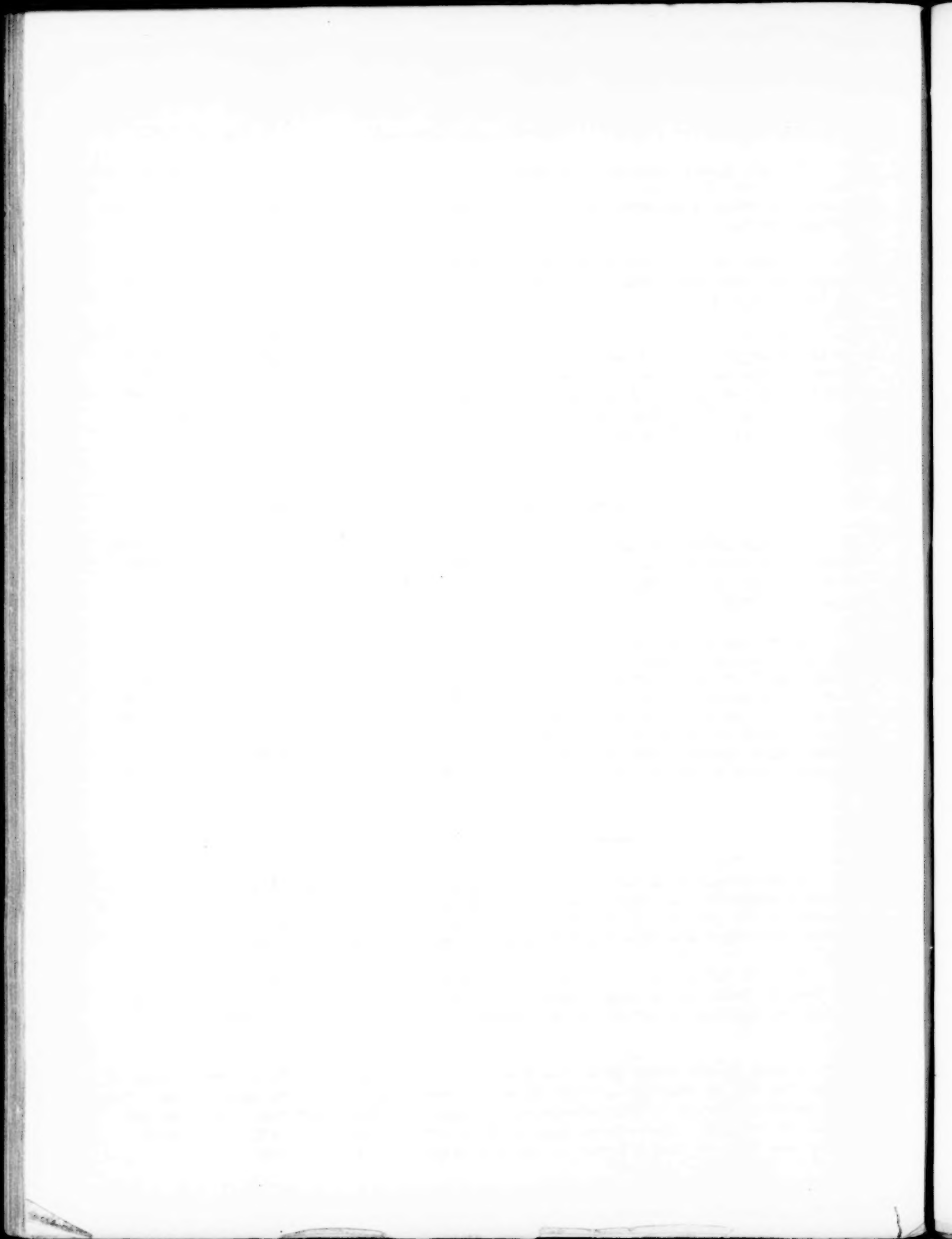
Under conditions prevailing in many parts of the country, they point out, tin-plate scrap and used tin cans can not be profitably treated by any of the established detinning processes. Their experiments indicate that this potential waste material can probably be recovered most usefully and efficiently by treating it in the electric furnace to produce synthetic cast iron, using low-grade, tin-free scrap for dilution to reduce the tin content of the product to within safe limits. One per cent of tin or less does not seriously affect the physical properties of cast iron, they claim.

PERFECT NEW ANTI-DIM FOR WINDSHIELDS

A new preparation to prevent dimming of windshields on automobiles, or glass windows at sea, has been adopted by the Navy Department after long research on the subject by the Chemical Warfare Service. It avoids the use of castor oil which was the base of similar preparations used during the war.

The new substance is a sodium^{salt}/of sulphonated rapeseed oil, with an excess of caustic soda, and a small amount of water glass, glycerine, and engine oil. It may be applied in sticks or by wiping the glass with a cloth impregnated with it.

A wind shield so treated remained clear after having been driven through a dense fog for 30 minutes. Tried at sea it was found effective against fog, rain, and spray, although it was necessary to renew it after each rain. Preliminary tests on submarine periscopes have been so satisfactory that 150 sticks were made and will be distributed to the submarines for further tests.



TABLOID BOOK REVIEW

THE SCIENCE OF INSIGNIFICANT THINGS,- By William E. Ritter, Director, Scripps Institute for Biological Research.

One of the most important things of science in its capacity of servant to mankind is the great variety of ways in which it can be useful.

Of all these ways none are more generally applicable than that of enabling everybody to become better acquainted with every thing, especially every natural thing round about him.

And the chief value of such acquaintance lies in the better relationships it enables people to establish with whatever they come in contact. It enables them to be more friendly with the innumerable things that by nature incline to friendliness; and on the other hand it enables them to be more wisely wary of things that are by nature unfriendly. Much the same can be said, but said more scientifically as follows:

Among the functions of science none is more important than that of helping people to see more meanings in common things than the hum-drum of ordinary life requires them to see.

These reflections are induced by a recent book noteworthy in the direction suggested by the remarks. "Great and Small Things" is the book's title. And the name of its author, Sir Ray Lankester, K.C.B., F.R.S., assures one before ever he opens the book that whatever things are treated in it as great are truly great; and that whatever things are treated as small will nevertheless yield something informative and interesting, with a good chance of their yielding something fascinating.

For example, just now when nobody but a few persons whose opinions are not worth much, are sure where our civilization is "at", what subject is more important than that of Progress? What is progress? How are we to know whether we are progressing forward or backward? What causes progress? As to human progress, how much can the humans themselves do to speed it up or slow^{it} down or guide it?

In the space of eight pages, neither large nor closely printed, one finds here more real information and sensible opinion on this subject than he finds in some whole volumes that have lately been written on it.

And as to small things, what smaller does one commonly meet than wasps, pond snails and phagocytes?

If anybody doubts whether anything useful or interesting can be learned about these particular little things, let him resolve his doubts by reading the short chapters of this book on these subjects,

I will not mention all or even many of the other thirty-three subjects treated, resting on the guess that anyone who may be influenced by what has been said to see the book, will not be satisfied by reading the chapters referred to.
